



ISTAR System Integration - lessons learned

David Ashton

A presentation to C4ISTAR RUSI Conference

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Warfare trends

- Smaller conflicts with greater global impact
- Global communications
- High media interest
 - conduct of operations under media scrutiny
 - greater need for justification of actions
 - increased political involvement
- Involvement with coalition forces

Impact on C4ISTAR operations

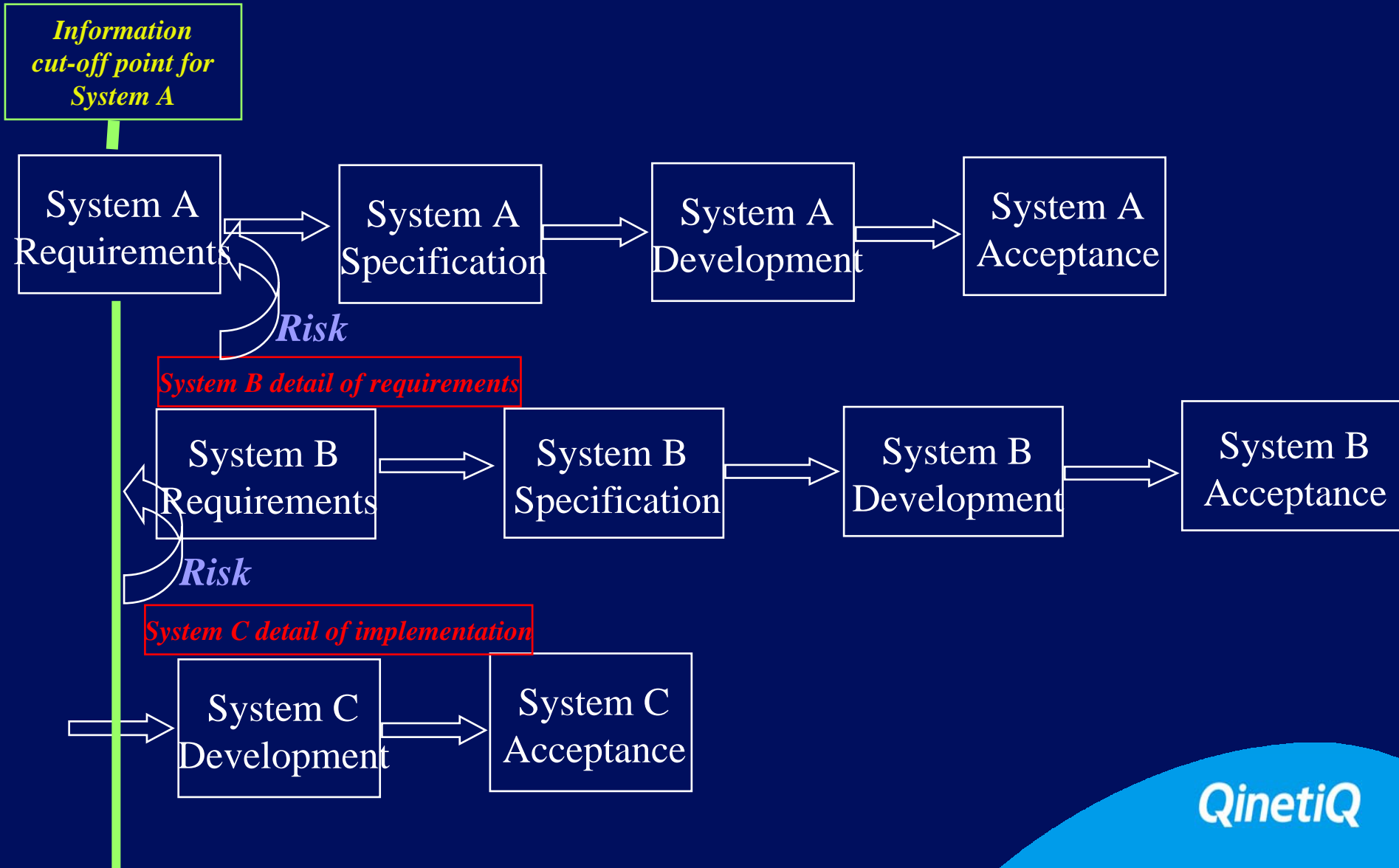
C4ISTAR operations need:

- 'All informed' architecture
- Timely links between decision makers and assets
- Reactive tasking, sensor collection and exploitation
- Long-loiter surveillance
- Cross-cueing
 - detection -> recognition -> identification -> attack -> BDA ->
- Interoperability
 - cross-cueing and burden share

ISTAR systems procurement

- Procurement of ISTAR systems
 - each a C4ISTAR integration opportunity
 - in reality a stove-pipe manufacture
 - procurement drivers (especially risk avoidance)
 - extent of interoperability
 - full interoperability rarely achieved
 - often based on government owned IPR/common equipment
 - extent of C⁴ISTAR integration determined by:
 - requirements capture (greater vision = cost)
 - technology cut-off point
 - information cut-off point

Information cut-off point



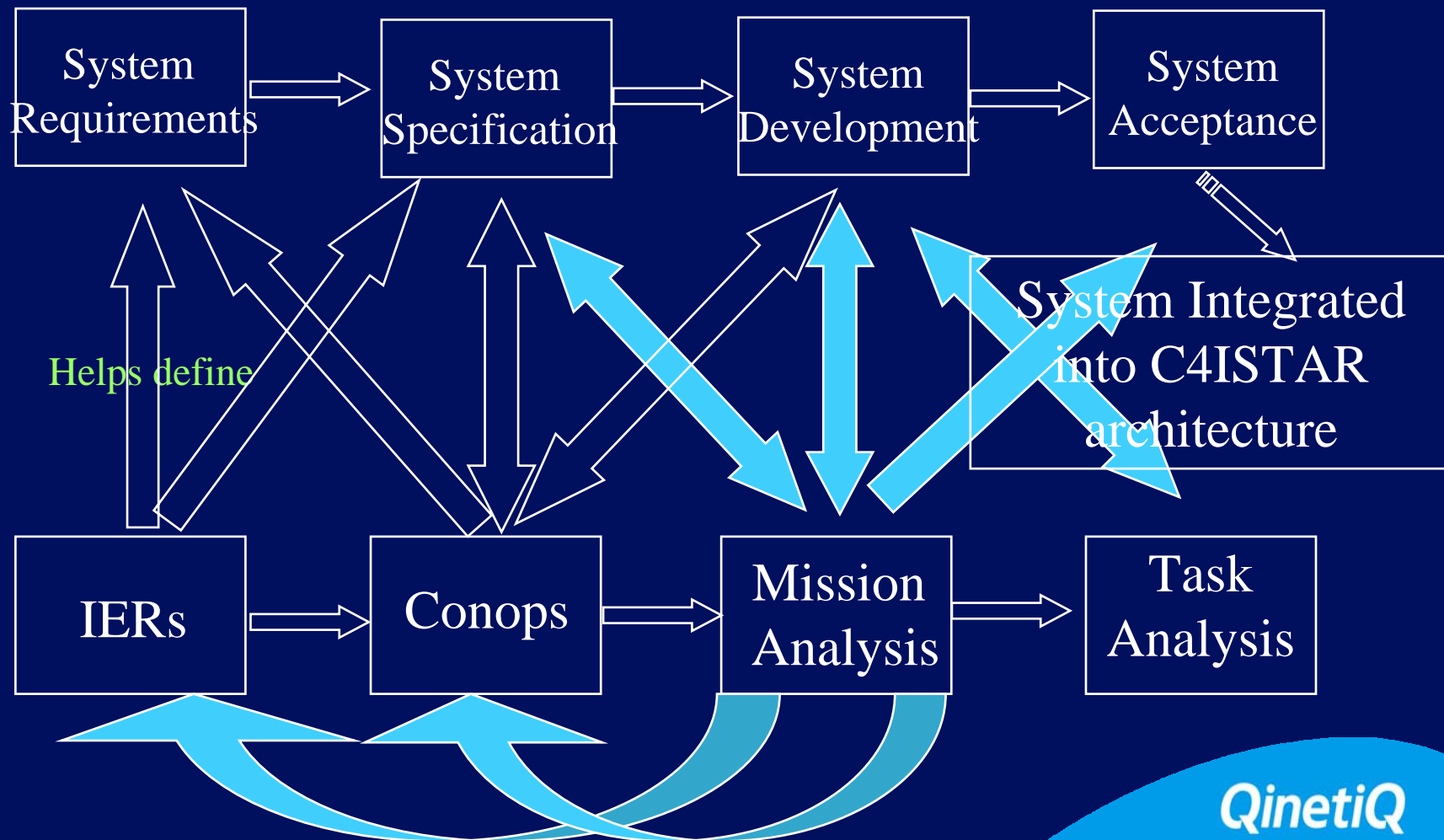
ISTAR integration - some lessons learned

- Change inevitable (the later the change the greater the cost)
- Actively manage changes in standards, formats, comms interfaces, C² processes
 - agree implementation standards, but fund upgrade paths
- For interoperability mandate common equipment
- Provide C4ISTAR context information to the supplier:
 - Information Exchange Requirements (IERs)
 - Concept of Operations (CONOPS)
 - Mission analysis

Mission analysis - what is it?

- A stakeholders systems engineering roadmap based on:
 - a functional breakdown of a complete mission
 - chronological, concurrent, sequential and related processes
 - processes inside & outside the system boundary e.g CCIRM
 - information inputs, outputs, decision points and interfaces
 - operational scenarios
- Provides:
 - context for operational integration
 - validation of system design
 - basis for operational trials etc

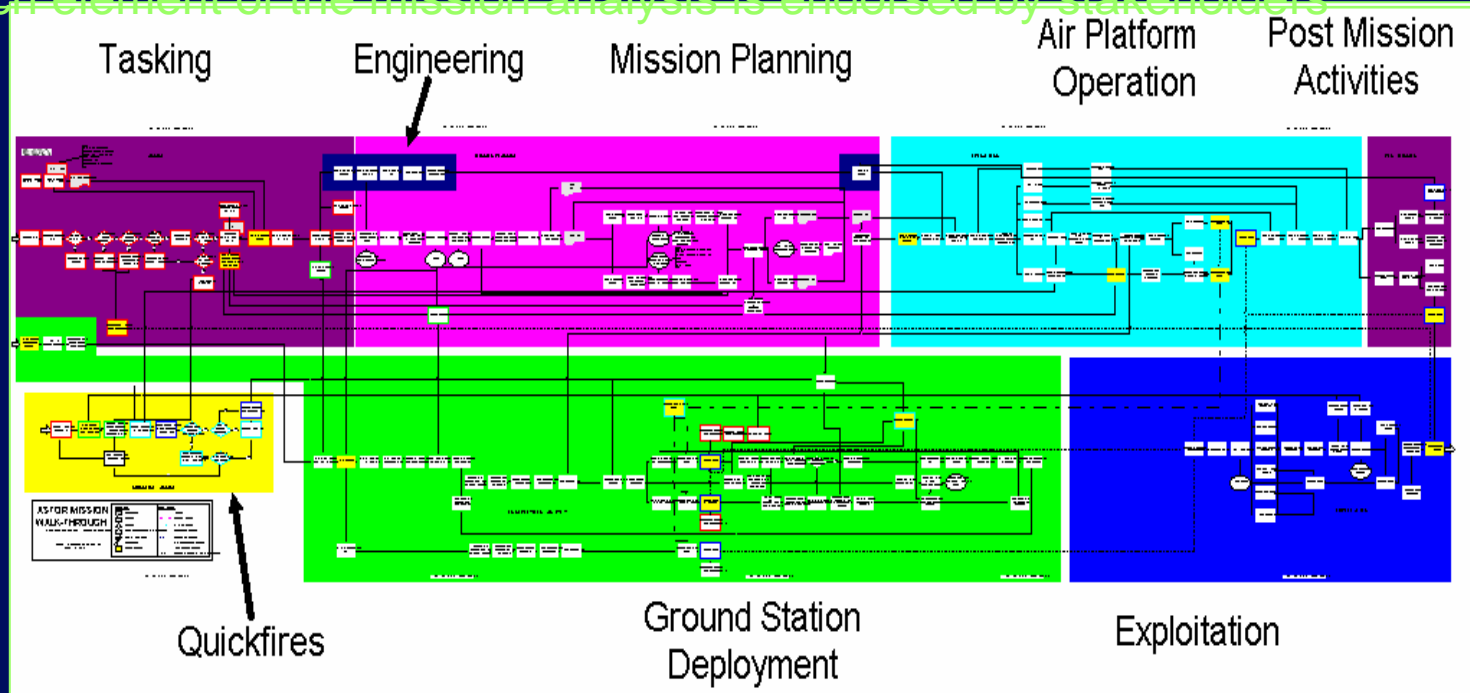
Systems concepts



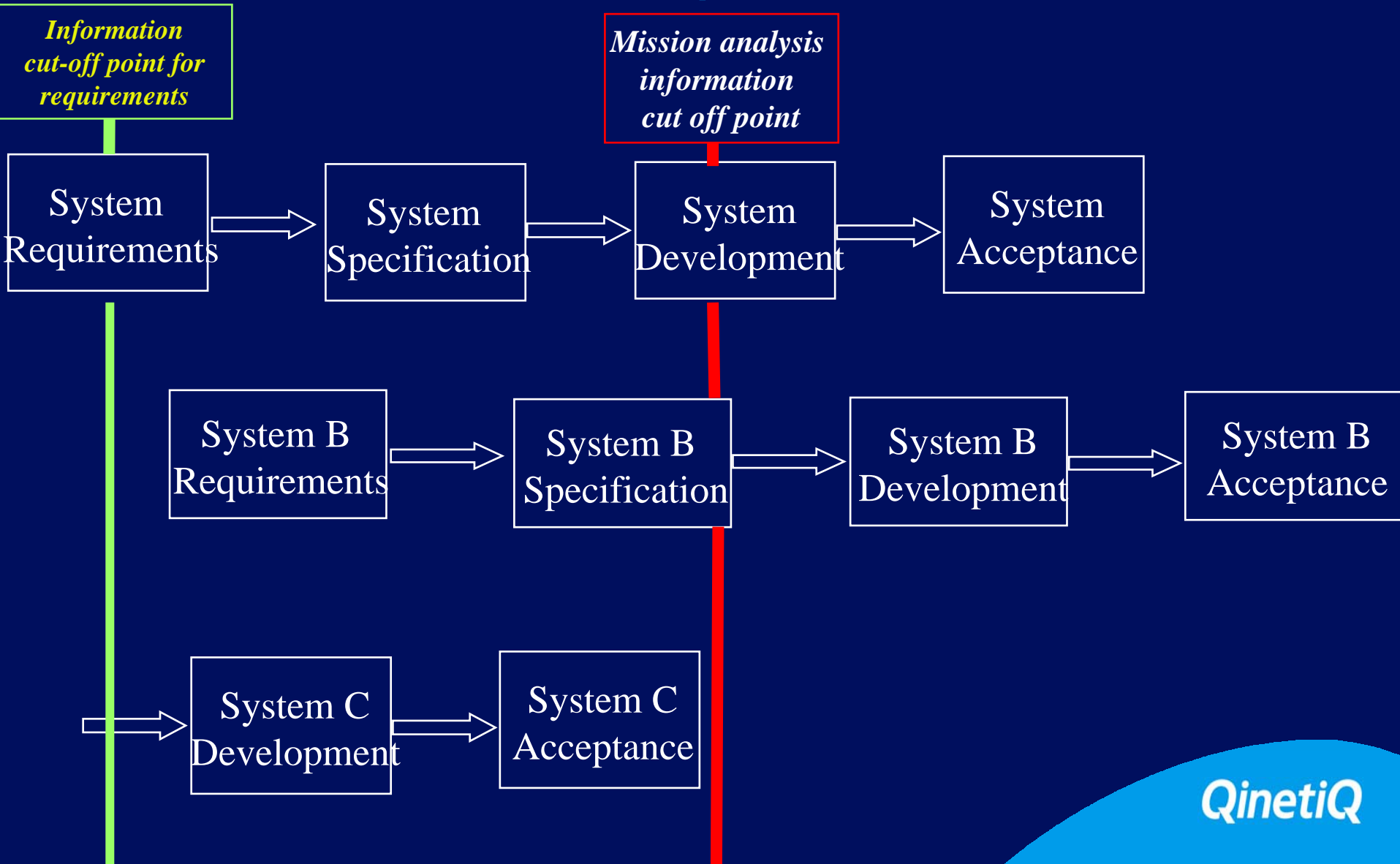
Mission analysis

The mission analysis indicates mission processes, information inputs and outputs (needed by each process) and decision points. It also illustrates influence between processes, the sequence of activities and interdependence

Each element of the mission analysis is endorsed by stakeholders



Information cut-off point



ISTAR procurement

- System integration into operational environment is complex
- ISTAR procurement slow, but C4 changes often dynamic
- Need to develop a framework architecture comprising:
 - stable infrastructure
 - clear interfaces
 - evolving functions
- Trade-offs essential as development confronts reality
- All stakeholders looking for clarity
 - win-win situation when it is provided and mutually agreed